

Ralph E. Cascarilla

From: Rosanne S. Dunlap on behalf of Ralph E. Cascarilla
Sent: Tuesday, September 05, 2006 5:31 PM
To: 'felitti.peter@epa.gov'
Cc: 'Joe Lonardo'
Subject: FBAG Statement of Position
Attachments: 09052006_171817.pdf; 09052006_171122.pdf

US EPA RECORDS CENTER REGION 5



Peter - Attached is a copy of my correspondence to you along with an electronic copy of the FBAG's Statement of Position to commence formal dispute resolution under the Consent Decree for the Fields Brook Superfund Site. As you can see from my letter, you will receive the entire submission tomorrow morning by Federal Express.

Please contact me with any questions or comments.

Regards,
Ralph

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Ralph E. Cascarilla
rcascarilla@walterhav.com | 216.928.2908 direct phone | 216.916.2346 direct fax

**Walter &
Haverfield** LLP
attorneys at law

The Tower at Erieview
1301 East Ninth Street, Suite 3500, Cleveland, Ohio 44114-1821
216.781.1212 tel | 216.575.0911 fax | www.walterhav.com

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**STATEMENT OF POSITION
TO THE
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ON BEHALF OF THE
MEMBERS OF THE FIELDS BROOK ACTION GROUP
CONCERNING
DETREX DNAPL CONTAMINATION IN EXPOSURE UNIT 8
FIELDS BROOK SUPERFUND SITE**

September 5, 2006

RALPH E. CASCARILLA
Walter & Haverfield LLP
The Tower at Erieview
1301 E. Ninth Street, Suite 3500
Cleveland, OH 44114-1821
216.928.2908 (direct)
216.916.2346 (direct fax)
rcascarilla@walterhav.com

JOSEPH D. LONARDO
Vorys, Sater, Seymour & Pease
1828 L Street, NW
11th Floor
Washington, DC 20036-5109
202.467.8811 (direct)
202.533.9037 (fax)
j.d.lonardo@vssp.com

**COMMON COUNSEL TO THE
FIELDS BROOK ACTION GROUP**

TABLE OF CONTENTS

PREFACE.....	1
INTRODUCTION TO THE DISPUTE AND STANDARD OF REVIEW.....	2
SUMMARY OF RELEVANT TECHNICAL INFORMATION.....	5
I. DETREX CORPORATION'S FAILURE TO IMPLEMENT EFFECTIVE SOURCE CONTROL MEASURES AT ITS FACILITY HAS ALLOWED FOR THE CONTINUED MIGRATION OF DNAPL INTO THE SOU AND FWA OF EU 8 SINCE 2001.	5
A. Description of the Extent of DNAPL Contamination at the Detrex Facility and Source Area.....	5
B. The Detrex Site Characterization was Grossly Inaccurate, Leading to Incorrect Assumptions Resulting in the Failure to Contain the Movement of DNAPL Toward EU 8.....	7
II. THE CHARACTERISTICS AND MOVEMENT PATTERNS OF DNAPL CONFIRM THAT THE DETREX FACILITY IS THE ONGOING SOURCE OF CONTAMINATION PRESENT IN THE SOU AND FWA OF EU 8.	9
A. The 2001 DNAPL Investigation Demonstrated Subsurface Migration Was Occurring From the Detrex Source Area to EU 8.....	10
B. The 2005 DNAPL Investigation Confirms That New DNAPL Contamination Continues to be "Pushed" into EU 8 by Uncontrolled Pressure from the Detrex Source Area.....	12
ANALYSIS OF APPLICABLE LEGAL STANDARDS.....	14
III. THE FBAG IS NOT REQUIRED BY THE FIELDS BROOK CONSENT DECREE AND RELATED SITE DOCUMENTS TO REMOVE DNAPL CONTAMINATION IN THE SOU AND FWA OF EU 8 CAUSED BY MIGRATION FROM THE DETREX SOURCE AREA SINCE 2001, OR TO REMOVE "DNAPL MATERIAL" LEFT IN PLACE WITH THE CONSENT OF USEPA AFTER THE 2001 REMEDIAL ACTION.....	14
A. The Remedial Action Requirements for EU 8 in the 2001 ESD Were Based on Performance Standards to Protect Human Health and the Environment.....	16

B.	The Remedial Action (Including the DNAPL Clean Up Required by the 2001 ESD) Was Completed by the FBAG, Accepted by USEPA and Met All Applicable Remedial Requirements.....	18
C.	After Completion of the Remedial Action, the FBAG's Only Obligations at the Site for DNAPL Contamination Relate to the Maintenance of the Applicable Performance Standards for O&M Established by the Consent Decree.....	20
IV.	THE FBAG's OBLIGATIONS UNDER THE CONSENT DECREE AND APPLICABLE PERFORMANCE STANDARDS DURING O&M PERTAINING TO ANY DNAPL CONTAMINATION REMAINING IN THE SOU AND FWA AFTER THE 2001 DNAPL CLEAN UP APPLY ONLY TO THAT IN AREAS PRESENTING A RISK TO HUMAN HEALTH AND THE ENVIRONMENT.....	22
A.	Achievement of the O&M Performance Standards For DNAPL Has Been Confirmed During Routine Monitoring Activities in EU 8	22
B.	DNAPL is Not Present in the SOU Sediment, the Scour Zone, or in the Portions of the FWA Where a Risk of Exposure is Expected to Occur	23
C.	The O&M Monitoring Program Implemented by FBAG is Appropriate and Effective to Determine Compliance with Performance Standards Now and in the Future.....	24
	CONCLUSION	26
APPENDIX A – Performance Standards Excerpts and Summary		
APPENDIX B – Exhibits Referenced in Position Statement		
APPENDIX C – Informal Dispute Proceeding Presentation by FBAG to USEPA dated February 8, 2006		
APPENDIX D – Informal Dispute Proceeding Presentation by FBAG to USEPA dated May 31, 2006		

PREFACE

The Fields Brook Action Group ("FBAG") companies recognize that the preliminary decision of the USEPA administrative staff is routinely affirmed in this phase of the formal dispute resolution process. However, we respectfully suggest such a conclusion is not warranted in this case. We firmly believe that an impartial review of this Position Statement will demonstrate that the FBAG has fully complied with its Remedial Action requirements under the Consent Decree relating to the removal of DNAPL contamination, and that the remedy in EU 8 continues to meet all applicable Performance Standards for the Fields Brook Superfund Site.

While the FBAG has acted responsibly and fulfilled its commitments, Detrex Corporation ("Detrex") has failed for nine years to accomplish any form of meaningful source control to contain at least 250,000 gallons of DNAPL located at its facility despite the terms of an explicit UAO for that purpose. This failure has allowed ongoing DNAPL migration from the Detrex facility to continue to contaminate EU 8 since 2001. This is especially relevant at this juncture because the FBAG companies were specifically assured by the Agency that effective source control measures would be in place to control the flow of DNAPL from the Detrex facility and protect the SOU and FWA remedy in EU 8 before they commenced the Remedial Action. As important, USEPA has inexplicably allowed Detrex to defer and delay source control measures at its facility.

The FBAG companies believe that the USEPA administrative staff seeks to arbitrarily order them to clean up conditions resulting from Detrex's ongoing DNAPL contamination of EU 8, thereby improperly transferring the financial consequences to the FBAG resulting from the failure of Detrex Corporation to implement source control measures at its facility. Throughout the informal negotiation period, it has become increasingly apparent that this process is arbitrary and outcome determinative to meet that objective. Indeed, the staff response has been remarkably bereft of any substantive information to refute the overwhelming legal and technical position presented by the FBAG and its independent experts.

The FBAG has concluded this position is motivated by the Agency's perception that Detrex does not have the financial resources to address the effects of the ongoing DNAPL contamination of Fields Brook, including EU 8, migrating from the massive and uncontrolled source area at its facility. Apparently, the Agency's perceived path of least resistance is to order the FBAG companies to do more and pay more – even where it is clear that new contamination has migrated into EU 8 since the 2001 Remedial Action and DNAPL-impacted "materials" were allowed by the Agency to remain in EU 8 after the 2001 cleanup. This course of Agency decision-making is manifestly arbitrary and unjustified. The FBAG companies are not jointly and severally liable for the additional costs resulting from Detrex's failure to fulfill its independent source control obligations mandated by the Detrex UAO.

INTRODUCTION TO THE DISPUTE
AND
STANDARD OF REVIEW

In accordance with the provisions of paragraph 69(a) of the Consent Decree entered in the matter of the *United States of America v. GenCorp, et al.*, Case No. 5:89-CV-1866 (Judge Dowd) (1999 CD, Exhibit 1), the Fields Brook Action Group ("FBAG") companies¹ hereby invoke formal dispute resolution procedures and submit this Statement of Position because the parties are unable to resolve the dispute between them through informal negotiation as to Exposure Unit ("EU") 8 of the Fields Brook Superfund Site ("Site"). The FBAG companies further state that formal dispute resolution should proceed pursuant to paragraph 71 of the Consent Decree.

The informal dispute resolution process under the Consent Decree was commenced as a result of the March 1, 2006 letter from Terese Van Donsel, USEPA Remedial Project Manager for the Fields Brook Superfund Site to the FBAG companies (Exhibit 2). The March 1, 2006 letter contained USEPA's findings or conclusions that the Consent Decree requires the members of the FBAG to undertake "... removal of DNAPL material currently in Fields Brook," and that the FBAG companies are responsible for remediating the DNAPL contamination migrating into Fields Brook since 2001. Further, the sixth paragraph of the March 1st letter directed that any DNAPL currently in Fields Brook must be removed by "excavation work to be performed by the FBAG in Fields Brook." None of these findings were supported by specific reference to provisions of the Consent Decree or other applicable document giving USEPA the authority to order such new remedial work by the FBAG.

By their letter in response of March 27, 2006, the FBAG companies disputed the finding that they are responsible for the DNAPL contamination in EU 8 since they are not the source of the DNAPL. (Exhibit 3). Further, they are not obligated to undertake excavation of the DNAPL migrating from the Detrex facility because no provision of the Consent Decree imposes such an obligation on them. In addition to these specific objections, the FBAG companies disputed the generalized conclusion articulated in the March 1, 2006 letter that the DNAPL material identified in the 2005 Fields Brook DNAPL investigation was missed as a result of "unintentional omissions during the remedial excavation work" performed in the 1999 through 2001 period.

¹ As previously reported to USEPA, Detrex Corporation is separately represented with respect to DNAPL issues at the Fields Brook Superfund Site. Hereafter, the term "FBAG companies" is understood to refer to the Work Settling Defendants other than Detrex Corporation as so named in the Consent Decree. This Position Statement is not submitted on behalf, nor does it purport to represent the views, of Detrex Corporation.

According to the July 31, 2006 letter partially terminating the informal negotiations period from Peter Felitti, Associate Regional Counsel, USEPA has reaffirmed its position set forth in the March 1st letter as to DNAPL contamination in EU 8 of the Fields Brook Site, but extended the informal dispute resolution negotiation period until August 28, 2006 as to EU 6. (Exhibit 4).

The unrefuted evidence establishes that EU 8 and other areas of Fields Brook continue to experience uncontrolled subsurface migration of DNAPL from the Detrex source area because it has not been subjected to effective source control measures as required by the Detrex UAO dated December 24, 1997 ("1997 Detrex UAO", Exhibit 5). Throughout the informal negotiation process, USEPA has not disputed this unassailable fact nor offered a credible alternative explanation for the ongoing subsurface migration of DNAPL from the Detrex source area into the adjacent DS Tributary, EU 6 and EU 8 of Fields Brook.

The Agency's March 1st letter attempts to avoid the implications stemming from inescapable conclusion that the Detrex source area is the ongoing source of DNAPL contamination migrating to EU 8 by relying upon an artificial and unsupportable determination that the DNAPL now present in EU 8 was "missed" during the 2001 DNAPL cleanup. In addition to ignoring the evidence of historical and ongoing DNAPL migration manifest in all other areas of Fields Brook adjacent to the Detrex facility including EU 8, no provision of the Consent Decree or other applicable document related to the Site requires the FBAG companies to assume responsibility for the remediation of conditions caused by the migration of new DNAPL into the FWA or SOU of EU 8 from the Detrex source area since completion of the Remedial Action in 2001.

As will be demonstrated by this Statement of Position, the FBAG expeditiously and successfully completed the Remedial Action in accordance with the requirements of the Consent Decree and related documents for removal of DNAPL in EU 8 in 2001. Further, USEPA understood and agreed that the remedy did not require removal of all DNAPL anywhere in EU 8 and that DNAPL contamination and impacted soil or "materials" would necessarily remain in Fields Brook after the completion of the DNAPL removal as acknowledged by the August 15, 2001 Explanation of Significant Difference ("2001 ESD", Exhibit 6) and related work plan approved by USEPA. The FBAG companies did not agree to undertake, and the Consent Decree does not require, the removal of all DNAPL or DNAPL impacted materials as a result of the 2001 remediation.

Further, the applicable Performance Standards for the Operation and Maintenance phase at the Site only address DNAPL that is present in defined "exposure zones" within the Sediment Operable Unit ("SOU") and the Floodplain and Wetlands Area ("FWA") of EU 8. The 2005 DNAPL investigation and routine O&M monitoring in August 2006 conducted by the FBAG confirm that DNAPL is not present in these exposure zones in

EU 8. Consequently, the remedy remains protective of human health and the environment and fully compliant with the applicable Performance Standards for EU 8.

By letter of April 17, 2006 from Peter Felitti, Associate Regional Counsel (Exhibit 7), USEPA further explained its view that the FBAG companies are required to undertake DNAPL removal activities as a requirement of the O&M Plan approved by USEPA. The 2001 ESD relating to DNAPL issues is cited as further support of the argument that if sediment monitoring shows DNAPL related contaminants are entering Brook sediment, additional excavation may be required. Mr. Felitti's letter then concluded that the mere presence of DNAPL in the brook (without regard to location or depth) above levels set forth in the ROD and 2001 ESD indicates that the Performance Standards required under the Consent Decree and the O&M Plan are not being maintained.

This conclusion is not based on an accurate reading of the Consent Decree and its Performance Standards, the Site's Operation and Maintenance ("O&M") Plan or the 2001 ESD because it ignores the clear determination reached by USEPA and embodied in the Consent Decree that only DNAPL located in defined areas of the SOU and FWA could present a risk of exposure requiring excavation. The monitoring program in both 2004 and 2006, as well as the results of the 2005 DNAPL investigation, show that DNAPL has not been found in the SOU sediment or the top one foot of the FWA – the exposure zones defined by USEPA. As a result, the stated rationale that the mere presence of DNAPL in any area of Fields Brook or EU 8 requires the FBAG companies to undertake new excavation activities post-Remedial Action is neither factually accurate under the applicable documents nor required to fulfill the Performance Standards established for the protection of human health and the environment during the O&M phase at the Site.

Therefore, the position advanced by USEPA evidences a fundamental misconception of the obligations of the FBAG companies under the Consent Decree, O&M Plan and 2001 ESD, and is contrary to the overwhelming and unrefuted scientific evidence developed to date and presented to USEPA relating to the migration of DNAPL from the Detrex facility. Indeed, the Agency engages in a tortured reading of the Consent Decree to miscast the FBAG's obligations in order to arbitrarily and improperly justify imposition of joint and several liability on the FBAG companies to pay for the consequences resulting from Detrex's failure to achieve source control at its facility.

SUMMARY OF RELEVANT TECHNICAL INFORMATION

I. DETREX CORPORATION'S FAILURE TO IMPLEMENT EFFECTIVE SOURCE CONTROL MEASURES AT ITS FACILITY HAS ALLOWED FOR THE CONTINUED MIGRATION OF DNAPL INTO THE SOU AND FWA OF EU 8 SINCE 2001.

It is undisputed that a massive subsurface pool of DNAPL has existed at the Detrex facility in an area described as the "lagoons," since at least the 1950s (when solvent manufacturing commenced) until approximately 1972 (when solvent manufacturing concluded). The lagoons consisted of seven locations where DNAPL was routinely dumped in to the ground as a waste product from manufacturing operations. (B. Kueper Report p. 6, Exhibit 8; J.R. Kolmer Report p. 9, Exhibit 10).

While it is also undisputed that DNAPL migrating from the Detrex source area caused the contamination addressed by the 2001 cleanup in EU 8 conducted by the FBAG, the Agency inexplicably denies that the recurrence of DNAPL contamination in 2005 results from the same subsurface mechanism that caused the 2001 contamination – even though source control measures were never effectively implemented at the Detrex facility as apparently required by the Agency.

Nevertheless, USEPA now seeks to transfer responsibility to the FBAG for the cleanup of the current DNAPL contamination of EU 8 (after the completion of the 2001 Remedial Action) despite the overwhelming evidence of ongoing DNAPL migration from the Detrex facility. Apparently, USEPA's justification for this position is that the DNAPL now present in the FWA and SOU in 2005 was "missed" during the 2001 remediation. This assertion completely ignores undisputed data from the Site, the scope of the Remedial Action and the visible DNAPL conditions confirming DNAPL migration from the Detrex facility occurring over 30 years.

A. Description of the Extent of DNAPL Contamination at the Detrex Facility and Source Area

Although Detrex has never provided an estimate of the amount of DNAPL dumped into the lagoons at its facility over this 20-year period, an independent DNAPL expert (using accepted geological soil characteristics and data provided by Detrex) has conservatively estimated that the source area contains at least 250,000 gallons of pure DNAPL product. (B. Kueper Report p. 8, Exhibit 8)

In the 1997 Detrex UAO, USEPA found that the DNAPL plume at the Detrex facility "... extends in radial pattern from the closed lagoon area and encompasses an estimated subsurface area of approximately 500,000 square feet (11.5 acres)." (1997 Detrex UAO, p. 16, Exhibit 5). In addition, USEPA correctly determined that various areas at the Detrex facility "... have or present the potential to recontaminate the Brook

with hazardous substances,” and that “... no remedial action can proceed in OU 1 or OU 4 until upstream areas, such as the Detrex facility, are remediated to prevent recontamination of remediated areas in OU 1 and OU 4.” (1997 Detrex UAO, p. 17, Exhibit 5). Operable Units 1 and 4 constitute the SOU and FWA of the Fields Brook Site.

Despite USEPA’s selection of a recommended remedial alternative based on downgradient containment in 1997, only limited portions of the remedy had been implemented by mid-2001 (a few DNAPL collection wells and related water treatment, construction of a slurry wall and a groundwater collection trench). (EPA 2004 Five Year Review, p. 9, Exhibit 9). Of these items, the slurry wall was the most significant. However, it was installed in the wrong location and was not installed in conformance with the requirements of the 1997 ROD. (J.R. Kolmer Report pp. 6, 7, Exhibit 10).

With USEPA’s approval, Detrex was allowed to “phase in” the DNAPL extraction system beginning in the summer of 2002 and that “phase in” process continues through the present with only twelve (12) extraction wells installed out of approximately forty (40) required by the containment system design, and only three (3) or four (4) of the twelve (12) installed wells demonstrating any level of operational capability. (J.R. Kolmer Report p. 7, Exhibit 10). By Detrex’s best estimate, only about 10,000 gallons of DNAPL out of approximately 250,000 gallons have been extracted to date from its source area – nine years after approval of the Detrex site remedy.

The failure of Detrex to install and operate an extraction system in accordance with the 1997 Detrex ROD’s requirement for the removal of mobile DNAPL is significant because its removal would have reduced and ultimately eliminated the driving force on the DNAPL pool which causes lateral subsurface migration into EU 8. The limited number of extraction wells installed and ultimately operated by Detrex was insufficient to eliminate the driving force for the DNAPL pool or prevent the continued subsurface migration of DNAPL towards EU 8. (B. Kueper Report pp. 8, 10, Exhibit 8).

Now, five years after the FBAG’s completion of the Remedial Action in the SOU and FWA of EU 8, USEPA has finally ordered Detrex to construct some form of a containment trench to control the migration of DNAPL to EU 8. (Exhibits 2 and 4). Unfortunately, this action is too little, too late to prevent the migration of new DNAPL contamination into EU 8 which is the subject of this proceeding.

DNAPL from the Detrex source area has remained uncontrolled and continues to contaminate Fields Brook – just as predicated by USEPA – because the remedial action ordered to be completed by USEPA at the Detrex facility was either not implemented, ineffective or based upon incorrect information about the Detrex site.

B. The Detrex Site Characterization was Grossly Inaccurate, Leading to Incorrect Assumptions Resulting in the Failure to Contain the Movement of DNAPL Toward EU 8

In addition to the unexplained delays in implementation of the Remedial Action by Detrex and USEPA's apparent unwillingness to order Detrex to execute its remedial plan, the remedial system design was based on an incorrect site geological model and an inaccurate depiction of the DNAPL plume area. These factors combined to result in the complete lack of containment to protect the remedy completed in the SOU and FWA of EU 8 by the FBAG in 2001.

Initially, Detrex misdescribed the size of the DNAPL source area at its facility in its submissions to the Agency, which caused an underestimation of the DNAPL contamination before implementation of source control measures. The DNAPL "Plume" identified by Detrex was mapped using relatively few data points, while ignoring data points indicating that significant quantities of DNAPL were present beyond the "plume" area (including the presence of DNAPL at locations where source control measures were to be installed). As observed by Mr. Kueper, the probability that the limited boring program utilized by Detrex was sufficient to fully delineate the lateral extent of DNAPL contamination was "extremely low." (B. Kueper Report p. 7, Exhibit 8). When these omissions of DNAPL migration are considered, it is clear that the lateral extent of DNAPL migration was significantly greater than depicted by Detrex at its facility. (J.R. Kolmer Report p. 5, Exhibit 10). As a result, Detrex source control measures were ineffectual from their inception.

The Detrex UAO had concluded that "the DNAPL plume is migrating toward the northwest, consistent with groundwater flow and the structure of the top of the underlying till layer." (Detrex UAO, p. 17, Exhibit 5). As more fully explained in the expert report of Joseph R. Kolmer of Civil & Engineering Consultants, Inc., Detrex's depiction of the subsurface geology at the Site was incorrect. Detrex presumed that the DNAPL flow was to the northwest based on drilling work performed at its facility. However, a review of all drilling logs by Mr. Kolmer has revealed grossly inaccurate findings and conclusions which are without factual support in any available drilling logs provided by Detrex. (J.R. Kolmer Report pp. 3, 4, Exhibit 10). These inaccurate representations caused a flawed description of the subsurface geologic conditions to become the basis of source control efforts at the Detrex facility.

As illustrated by Figure 11 from J.R. Kolmer's expert report (Exhibit 10), the general slope of the subsurface till layer from the Detrex source area is south-southwest and not primarily to the northwest as proposed by Detrex and accepted by USEPA. Moreover, the miscalculation of the assumed flow path of the DNAPL and the absence of a presumed subsurface "ridge" to contain the liquid DNAPL pool has resulted in the uncontrolled flow of DNAPL on top of and through the lacustrine clay and on top and through the till layer to Fields Brook and EU 8 for over 30 years. There has been no effective containment of the DNAPL source area not only since completion of the Fields

Brook remedial action by the FBAG in 2001, but from the 1970s when the uncontrolled dumping of DNAPL ceased. (B. Kueper Report pp. 8, 9, Exhibit 8; J.R. Kolmer Report, pp. 8-10, Exhibit 10).

The radial pattern of the DNAPL plume referenced earlier in the Detrex UAO was more accurate but nevertheless failed to acknowledge the presence and migration of DNAPL on top of and through the clay and till layers, and the general slope of those subsurface strata to Fields Brook – not just to the northwest of the facility. In part, this fundamental misconception resulted from insufficient and inaccurate data points used by Detrex to map the top of the till layer. As noted by Mr. Kolmer in his report:

In other words, DNAPL migration through the lacustrine clay from the original source area was sufficient to cause an accumulation of approximately one foot to over thirteen feet of DNAPL in the lacustrine clay. This is significant DNAPL migration. Any time DNAPL is observed in a monitoring well outside of its original source area, it means that significant migration has occurred. (J.R. Kolmer Report p. 8, Exhibit 10).

As a result, DNAPL from the Detrex facility source area has flowed to and contaminated the SOU and FWA in EU 8, as well as the DS Tributary and EU 6. No other credible explanation has been offered by either Detrex or USEPA to explain the widespread subsurface contamination found in the areas adjacent to the Detrex facility as well as EU 8. Furthermore, no credible explanation has been offered by Detrex or USEPA justifying the failure to implement source control measures or the reliance upon incorrect site data to design these measures.

II. THE CHARACTERISTICS AND MOVEMENT PATTERNS OF DNAPL CONFIRM THAT THE DETREX FACILITY IS THE ONGOING SOURCE OF CONTAMINATION PRESENT IN THE SOU AND FWA OF EU 8.

As a preliminary matter, an understanding of DNAPL fate and transport characteristics is important to understand the DNAPL contamination found in the FWA and the SOU of EU 8 in 2001 and 2005. DNAPL occurs in two forms in the environment:

Residual DNAPL: "Residual DNAPL is comprised of blobs and fingers (ganglia) of DNAPL that have been cutoff and disconnected from the continuous DNAPL" pool (Pankow & Cherry, 1996). EPA (1993) defines residual DNAPL as the "saturation below which fluid [DNAPL] drainage will not occur". EPA (1993) also states that "at residual saturation, DNAPL occurs as disconnected singlet and multi-pore globules within the larger pore spaces." Because residual DNAPL consists of discontinuous and disconnected blobs or ganglia, residual DNAPL is immobile.

Pooled DNAPL: A contiguous body of DNAPL that may accumulate on an aquitard or a relatively impermeable horizon (e.g., silt lens) is referred to as pooled DNAPL. DNAPL pools remain mobile until the DNAPL mass is depleted (i.e., dissipates to residual DNAPL) and/or the driving (gravitational) forces exerted by the DNAPL pool are insufficient for overcoming the opposing capillary forces. (B. Kueper Report p. 5, Exhibit 8).

(See page 49 of Appendix D for conceptual representation of DNAPL forms). To summarize, residual DNAPL is immobile, whereas a pool of DNAPL remains mobile until a state of equilibrium has been achieved.

DNAPL has been observed in small quantities in the SOU and FWA of EU 8 as well as EU 6 and the DS Tributary in 2005, approximately 4 years after DNAPL-affected sediment and soils in the SOU and FWA of EU 8 had been excavated and treated by the FBAG to address the same condition. It is undisputed that the Detrex facility is the source of the DNAPL observed in the SOU and FWA of EU 8 in 2001 and 2005. USEPA has acknowledged this fact in the 2001 ESD and no alternative source for the DNAPL has ever been suggested by either Detrex or USEPA. (2001 ESD p 7, Exhibit 6).

A significant quantity of uncontrolled DNAPL has been at the Detrex facility since the 1970s and continues to the present time. DNAPL thickness ranging from 0.8 to 13.6 feet has been measured in monitoring wells (J.R. Kolmer Report Figure 6, Exhibit 10) at the Detrex facility over a 3 acre area, which is equivalent to 2 football fields. The total

volume of DNAPL at the Detrex facility is estimated to be at least 250,000 gallons of "pure" DNAPL.

It is scientifically undisputed that the significant volume and thicknesses of DNAPL present at the Detrex facility provides a strong driving head which continues to push DNAPL (*via* sand seams and fractures within the lacustrine clay) radially from the Detrex lagoons or source area at a rate of at least 30 feet per year. (J.R. Kolmer Report p. 8, Exhibit 10). In addition to the observation of DNAPL in monitoring wells over a large area, this is further corroborated by DNAPL observations in a cable vault integrated into an underground cable line and 3 manholes along State Road, the embankment west of State Road, excavation advanced to install the Detrex slurry wall, the RMI property, and the DS tributary. (M. Sharma Report p. 6, Exhibit 12).

A. The 2001 DNAPL Investigation Demonstrated Subsurface Migration Was Occurring From the Detrex Source Area to EU 8

Utilizing data from the 2001 DNAPL investigation conducted by the FBAG, Manu Sharma of Gradient Corporation has prepared twelve cross sections and maps (attached at Exhibit 12) showing the results of measurements and observations made during the 2001 DNAPL Investigation.²

The 2001 DNAPL investigation included data from 51 test pits and trenches and 61 Geoprobe soil samples taken from subsurface depths. At these locations, field conditions were logged (e.g., discoloration, odors), soil lithologic characteristics were recorded, and soil samples were screened in the field using a field instrument known as a Photo Ionization Detector ("PID"), which provides information indicating the presence of DNAPL. In addition, a total of 73 soil samples, typically at the interface of the silt and lacustrine clay deposits in the subsurface, were collected and analyzed. (M. Sharma Report p. 3, Exhibit 12).

Indications of DNAPL reflected by elevated PID readings from field tests in EU 8 as well as high chlorinated ethene concentrations (key marker compounds for Detrex's DNAPL) were found outside (north) of the FWA, *i.e.*, in the area upland from EU 8, generally at the **silt/lacustrine clay interface** both in EUs 6 and 8 (Figures 2 and 5). In addition, DNAPL was observed outside the FWA east of State Road (upland of EU 8)

² Twelve geologic cross-sections, A-A' to L-L' (Figures 2 through 8 of Exhibit 12), depict conditions within the SOU and FWA. In addition to depicting soil stratigraphy, these cross-sections show visual DNAPL observations based on notation in boring logs (Section 5 of the CRA, 2001 report), PID readings, and total chlorinated ethene concentrations for samples that were collected and analyzed in a laboratory. A macro-level geologic cross-section (Figure 9 of Exhibit 12), depicts the stratigraphic relationship between the Detrex property and the SOU/FWA.

during the 2001 DNAPL remediation, leading to removal of soil beyond the boundary of the FWA (see Figure 1 – cross-hatched area near section G-G' and several other locations). The presence of these conditions within the subsurface, outside of and adjacent to the FWA of EU 8, can only be explained by sub-surface DNAPL migration from the Detrex source area. (M. Sharma Report p. 3, Exhibit 12; B. Kueper Report p. 9, Exhibit 8). Since these areas are outside of the SOU and FWA of EU 8, the presence of DNAPL in upland locations belies any assertion that DNAPL is not migrating into EU 8.

In addition, DNAPL was visually observed and high chlorinated ethene concentrations were recorded within the **lacustrine clay deposits**. For example, DNAPL “free product” was encountered over a 4 to 5 foot interval within the lacustrine clay deposits, upland and within EU 8 (Geoprobe GP3201 and GP3101; cross-section G-G'; Figure 5). Furthermore, low PID readings were recorded near and underneath the brook in this area. The presence of DNAPL over a large depth interval *within* the lacustrine clay and the absence of elevated PID readings in overlying deposits is clear evidence that DNAPL did not migrate downward from the brook into the underlying clays, but migrated *via* the subsurface to reach this location from the Detrex source area. (M. Sharma Report p. 3, Exhibit 12; B. Kueper Report p. 9, Exhibit 8).

The cross-section figures also show that discharges from the old Detrex outfall affected only a localized area near the outfall itself in the upstream portion of EU-8. With the possible exception of the small area surrounding the outfall, there is no evidence of top-down migration of DNAPL from the streambed, through the sand and silty sand layer, to the lacustrine clay. Discharges from the outfall cannot account for the widespread disposition of DNAPL in the subsurface throughout EU 8, particularly in the areas where DNAPL was subsequently observed in 2005 within or immediately adjacent to or underneath areas removed by excavation in 2001. (M. Sharma Report at p. 3, Exhibit 12).

Together, the various cross-section figures described above compiling site data and field observations demonstrate that subsurface migration of DNAPL (along the top of and in sand lenses within the lacustrine clay) was and continues to be the primary and most significant DNAPL migration mechanism from the Detrex source area to EU 8. (B. Kueper Report p. 7, Exhibit 8; M. Sharma Report p. 3, Exhibit 12).

The substantial, unconfined DNAPL source (estimated to be at least 250,000 gallons) on the Detrex property continues to provide both mass and force that causes DNAPL to migrate from the upland source area adjacent to but outside of the FWA, through the subsurface into the SOU and FWA of EU 8. This mechanism is responsible for the 2005 DNAPL observations and recontamination beneath or adjacent to previously remediated areas in the SOU of EU 8. (B. Kueper Report p. 8, Exhibit 8; M. Sharma Report p. 5, Exhibit 12).

B. The 2005 DNAPL Investigation Confirms That New DNAPL Contamination Continues to be "Pushed" into EU 8 by Uncontrolled Pressure from the Detrex Source Area.

Upon discovery of DNAPL in EU 8 during routine O&M monitoring in 2005, the FBAG undertook a comprehensive investigation to define the nature and extent of the DNAPL by the mapping of the lacustrine clay subsurface layer using more than 160 subsurface Geoprobe borings, the installation of approximately 30 trenches across Fields Brook (extending to a depth of up to 4 to 5 feet below the water-sediment interface within the brook), dye testing and chemical analysis to identify the presence of DNAPL. Further, an approximately 1,200 foot long trench was installed in the EU 8 FWA parallel to the brook (Figure 10, Exhibit 12). Elevated PID readings, strong odors characteristic of Detrex's DNAPL, and a sheen on the water was noted in this trench, which are consistent with the presence of DNAPL contamination. (M. Sharma Report p. 6, Exhibit 12).

Including the initial DNAPL sighting, DNAPL has been observed at 4 locations within the SOU of EU 8 (Figure 2). Chemical analyses of DNAPL-impacted soil and water samples revealed a chemical signature consistent with Detrex's DNAPL, clearly indicating that the DNAPL migrating into the FWA and SOU of EU 8 originated at the Detrex facility.

At all 2005 DNAPL observation locations within the SOU of EU 8, DNAPL was encountered beneath or adjacent to areas that had been remediated and backfilled with clean and/or remediated materials in 2001. (Figure 10, Exhibit 12). In addition, visual examination of the trenches along the boundary of the FWA and upland Detrex property did not indicate any evidence of "top down" migration (*i.e.*, no evidence of DNAPL entering from the brook and traveling vertically downward). Instead, DNAPL was found to be migrating through the subsurface on the clay surface and through sand seams and fractures within the lacustrine clay underlying the Detrex facility and EU 8. (M. Sharma Report pp. 5, 6, Exhibit 12).

Moreover, as a result of the 2005 DNAPL investigation, it was determined that the surface of the lacustrine clay was found to be sloping from the Detrex facility towards Fields Brook, thereby providing an additional mechanism for gravity flow of DNAPL from the source area to EU 8 (Figure 4a). A series of troughs were also mapped within the lacustrine clay surface that appear to be acting as preferential migration conduits for DNAPL flow from the Detrex source area. The 2005 DNAPL observations in EU 8 are located within or adjacent to these troughs. (J.R. Kolmer Report p. 10, Exhibit 10).

The consistency in chemical signature between Detrex's DNAPL and the soil and water samples collected from trenches within Fields Brook and EU 8, the observation of DNAPL within EU 8 generally beneath areas in the SOU that had previously been remediated, the slope of the lacustrine clay surface towards Fields Brook within EU 8,

and the observations (elevated PID readings, strong odors and sheen) recorded in the long trench installed parallel to the Detrex upland area boundary and the FWA clearly indicates that DNAPL from the Detrex property has migrated into EU 8 since the 2001 DNAPL remediation. As a result, these findings further corroborate that DNAPL from the Detrex facility is continuing to migrate towards EU 8 via subsurface pathways and is not the result of "missed DNAPL." (B. Kueper Report p. 8, Exhibit 8; M. Sharma Report p. 6, Exhibit 12).

The significant driving force provided by the Detrex DNAPL source area and the ineffectiveness of the Detrex source control remedy (see Section I) is resulting in continued migration (at a rate of 1 to 30 feet per year) of DNAPL from the Detrex facility into the FWA and SOU of EU 8. Moreover, DNAPL will continue to flow into the FWA and SOU of EU 8 unless effective source control is implemented at the Detrex facility. (B. Kueper Report p. 8, Exhibit 8; J.R. Kolmer Report p. 12, Exhibit 10).

ANALYSIS OF APPLICABLE LEGAL STANDARDS

III. THE FBAG IS NOT REQUIRED BY THE FIELDS BROOK CONSENT DECREE AND RELATED SITE DOCUMENTS TO REMOVE DNAPL CONTAMINATION IN THE SOU AND FWA OF EU 8 CAUSED BY MIGRATION FROM THE DETREX SOURCE AREA SINCE 2001, OR TO REMOVE "DNAPL MATERIAL" LEFT IN PLACE WITH THE CONSENT OF USEPA AFTER THE 2001 REMEDIAL ACTION.

The explicit terms of the Consent Decree negotiated by the parties to this proceeding and approved by the court in July 1999 provides the framework for resolution of this dispute. The Consent Decree imposes certain defined obligations upon the FBAG companies relating to the performance of the Remedial Action in the SOU and FWA of EU 8. With regard to the Remedial Action standards for DNAPL contamination excavation and removal in EU 8, those standards are contained in the Statement of Work (SOW) attached to the Consent Decree, as modified by the subsequently issued 2001 ESD. Consequently, the critical path for this analysis begins with the requirements applicable to the DNAPL remediation contained in the 2001 ESD.

The 2001 ESD identified the actual scope of work to be performed in the Remedial Action phase by defining the extent of soil and sediment removal required for areas with DNAPL contamination in the following terms:

For the Floodplain/Wetland Area, all areas where liquid DNAPL is present and/or where hexachlorobenzene (HCB) levels exceed 200 ppm shall be excavated. The excavation shall go to, and 6 inches into, the underlying clay.

For the sediment within Fields Brook, all sediment and underlying silt soils in the areas of DNAPL contamination will be removed down to and 6 inches into the underlying clay layer. . . . The increased volume of sediment to be removed will basically clean out the upper channel [of Fields Brook] in the area where the DNAPL is present. (2001 ESD p. 2, 3, Exhibit 6).

Accordingly, the DNAPL removal requirement for EU 8 was excavation from the soil surface down to 6 inches into the subsurface clay layer in both the SOU and FWA. As a result, the 2001 ESD did not state an absolute removal standard for liquid or mobile DNAPL everywhere in the SOU or FWA of EU 8. This was appropriate since the objective of the DNAPL remediation was to insure that DNAPL contamination did not enter brook sediment after completion of the Remedial Action. (2001 ESD p. 8, Exhibit 6).

Further, the removal of DNAPL by excavation under the requirements of the 2001 ESD was not a Performance Standard. Under the Consent Decree, the Performance Standards define the acceptable level of risk in relation to specific chemicals and geographic locations, thereby demonstrating whether the remedy is protective of human health and the environment. **The protectiveness of the DNAPL remedy performed by the FBAG is demonstrated by the fact that from completion of the 2001 DNAPL cleanup to the present, no evidence exists to indicate that DNAPL has contaminated brook sediment or the top one foot of the FWA in EU 8.**

USEPA now embarks on an after-the-fact reinterpretation of the Consent Decree and related decision documents by attempting to unilaterally impose a new Remedial Action standard on the FBAG companies that is not contemplated by the Consent Decree or the 2001 ESD. USEPA seeks to predicate a new requirement for DNAPL excavation based on a presumption that the mere presence of DNAPL in the SOU or FWA of EU 8 – whether purportedly “missed” during the 2001 remediation or caused by migration from the Detrex facility since 2001 – constitutes a failure by the FBAG to meet Performance Standards for the protectiveness of the remedy.

As explained below, the Performance Standards established by the Consent Decree are used to determine whether the objectives of the Remedial Action are being met, and that determination is made in relation to the exposure zones defined by USEPA. Consequently, without an obligation to remove all DNAPL wherever located, the question of whether DNAPL was “missed” in areas outside of the exposure zones is completely irrelevant. Under any circumstance, the FBAG is not responsible for undertaking additional Remedial Action to remedy DNAPL contamination caused by a failure of source control at the Detrex facility since 2001, or where DNAPL was left in place with the approval of USEPA.

Significantly, the Consent Decree does not contain the “reopener” provisions common to many CERCLA consent decrees that allow USEPA to impose additional remedial action obligations based on new information or conditions not previously known to the Agency. The omission of these standard reopener provisions from the Consent Decree vividly demonstrates the correctness of the FBAG’s position that the terms of the Consent Decree are not subject to reinterpretation to require new DNAPL Remedial Action standards to be arbitrarily imposed by the Agency after the completion of the Site work. The obligations of the Consent Decree were focused on the Site conditions as they existed in 2001 and not on fixing responsibility for new contamination occurring since that time.

A. The Remedial Action Requirements for EU 8 in the 2001 ESD Were Based on Performance Standards to Protect Human Health and the Environment

The objectives of the Consent Decree for the SOU and FWA are to protect human health and the environment (1999 CD Section V, para. 5, Exhibit 1). The Performance Standards provided by the Consent Decree are designed to achieve these objectives, and are defined in the Consent Decree with reference to several Agency decision documents related to the Site (1999 CD Section IV, p. 14, Exhibit 1).³

The Performance Standards described in the various RODs and ESDs include chemical-specific cleanup goals based on acceptable levels of risk that are applied to defined depths over which exposure may occur in both the SOU and FWA of EU 8. The Remedial Action requirements established to achieve these Performance Standards involved excavation of sediments and soils to defined depths within the SOU and FWA.

Human health is protected if contaminants are not present at concentrations above their risk-based levels defined in the RODs and ESDs for the Site in areas of the SOU and FWA where human contact may occur. As observed by USEPA, this standard is appropriate since, "U.S. EPA's risk assessment guidance and policies do not require cleanup of areas which are not or would not become exposed to human health or the environment." (1997 SOU ESD, Section 4.B, Exhibit 13).

In the SOU, human exposure is presumed to be possible to surface sediments as well as sediments to the depth of scour, because scourable sediments have the ability to move to the surface. Therefore, the Remedial Action requirement for the SOU was excavation of sediments above a scour depth:

"U.S. EPA has determined that it (sic) acceptable to leave contaminated materials below the **calculated scour depth in the Brook sediment** and install erosion-protection materials in excavation areas because these materials would not scour nor be exposed to present a danger to human health or the environment in the future..." (1997 SOU ESD, Section 4.B, Exhibit 13).

In the FWA, human exposure is presumed to be possible to surface soils, but only to one foot in depth:

"U.S. EPA's research indicates that subsurface exposure **below one foot of soil depth in residential and FWA backyards** generally does not occur unless erosion or excavation was expected in that area (which is not expected to occur)." (1997 FWA ROD, Section V.B, Exhibit 14).

³ Each of the Performance Standards referenced in the Consent Decree and related to DNAPL remediation is discussed and summarized in Appendix A to this Position Statement.

Since the discovery of DNAPL contamination occurred after the CD was finalized, USEPA issued the 2001 ESD to address the cleanup requirements for the DNAPL. Although it remains consistent with the Consent Decree Performance Standard objectives of protecting human health and the environment, the 2001 ESD set new Remedial Action requirements necessary to achieve the Consent Decree Performance Standards in light of the new information. The 2001 ESD does not change or add to the Performance Standards, but instead establishes additional Remedial Action requirements to ensure the completed remedy meets the Performance Standards. Moreover, the 2001 ESD retained the focus on ensuring that potentially scourable sediments are not impacted.

Further, the 2001 ESD also makes clear that all residual contamination need not be remediated from locations where human exposure is not expected to occur:

"Subsurface soils above the clay layer that contain elevated VOCs and SVOCs need not be excavated if there is no liquid DNAPL present. Because the residual contamination is approximately 6 to 8 feet below ground surface, human contact is unlikely..." (2001 ESD, Section I. Introduction, page 3, referring to the FWA, Exhibit 6).

and

"The additional floodplain/wetland cleanup goals will not be applied to the residual soil contamination that will be left after this excavation, because the residual contamination is below a depth where human contact is likely. This is consistent with the "depth of scour" approach used as a limit for sediment excavation." (2001 ESD, Section 2.D, page 8, Exhibit 6).

The 2001 ESD concludes by stating that, "U.S. EPA has determined that the selected remedies, with the changes described above, will remain protective of human health and the environment..." (2001 ESD, Section IV, page 12, Exhibit 6).

As a result, the Remedial Action requirements for Fields Brook have consistently been designed to achieve the Performance Standards based on protecting human health and the environment, and specifically to achieve acceptable contaminant concentrations in the exposure zones described as the scourable sediments in the SOU and in the top one foot of soil in the FWA. In addition, the 2001 ESD Remedial Action requirements included removal of "liquid" or mobile DNAPL within certain areas (down to and six inches into the clay layer in both the SOU and the FWA) so that the sediment scour zone would not be affected in the future.

The 2001 ESD did not require removal of all DNAPL at every location in EU 8 since any DNAPL left behind in the FWA or SOU was immobile or inaccessible, and therefore posed no risk to human health or the environment. Neither the Consent Decree and its Performance Standards nor the 2001 ESD requirements mandate that the FBAG

companies undertake additional excavation triggered by the mere presence of DNAPL outside of the defined exposure areas in the SOU or FWA of EU 8. As explicitly acknowledged by USEPA “. . . additional excavation of floodplain soil *may* be required only if DNAPL contaminants are entering brook sediment.” (2001 ESD p. 8, Exhibit 6) (Emphasis added). There is no evidence of brook sediment being contaminated with DNAPL since completion of the 2001 clean up.

B. The Remedial Action (Including the DNAPL Clean Up Required by the 2001 ESD) Was Completed by the FBAG, Accepted by USEPA and Met All Applicable Remedial Requirements

The Remedial Action implemented by the FBAG companies in the SOU and FWA of EU 8 in 2001 successfully met the above-described remedial requirements. Sediments and soils from the FWA and SOU of EU 8 were excavated from areas indicated in Figure 1 of Mr. Sharma's Report (Exhibit 12) and backfilled with clean/remediated materials. The SOU in EU 8 was excavated fully, including all sediment, and 6 inches of the clay. Filter fabric and overlapping erosion matting were placed along the bottom and sides of the excavation. This was covered with a layer of erosion-resistant cobbles, which was then covered with clean sediments.

Areas of the FWA where DNAPL was observed were excavated to a minimum of 6 inches into the clay layer and sometimes much deeper, if visual signs of DNAPL were observed during excavation work. In fact within the FWA, the implemented remedial actions exceeded the 2001 ESD requirements since the excavation extended up to 3 feet into the lacustrine clay deposits, whereas the 2001 ESD only required the top six inches of the clay to be excavated. (M. Sharma Report p. 4, Exhibit 12). (Exhibit 6, pp. 2, 3). Excavated areas were replaced with clean clay to the pre-existing clay-soil interface, and then covered by clean hydric soils. Additional areas of the FWA were excavated to a depth of one foot in order to meet the CUGs specified in the 1997 ROD.

In total, approximately 10,000 yd³ of soils and sediments from the SOU and FWA in EU8 were excavated and backfilled with clean and/or treated materials. (5-Year Review, Table Brook-1, Exhibit 9). The remediation followed the remedial action requirements specified in the SOW and the 2001 ESD, met the risk-based performance standards stated in the Consent Decree, and was effective and appropriate. As a result, the DNAPL clean up required by the 2001 ESD for EU 8 was completed in accordance with all operative requirements established by USEPA.

USEPA has acknowledged that the Remedial Action for the Fields Brook Superfund Site was completed, and construction completion status was achieved, at OU-1 (SOU) and OU-4 (FWA) on September 30, 2003. This finding was set forth in a letter of September 30, 2003 from James M. Mayla, Chief, Remedial Response Branch Number 2, to representatives of the FBAG companies. (Exhibit 15). This conclusion was repeated

in the Five-Year Review for the Fields Brook Site which was approved on June 7, 2004. (Exhibit 9, p. 13).

Given the comprehensive nature of the remediation undertaken in 2001 to remove DNAPL contamination, only *de minimus* amounts of DNAPL, if any, could have remained in the FWA and SOU of EU 8. Furthermore, any DNAPL left behind would have been in a residual state, which by definition is immobile, or inaccessible. (See discussion in Section II, *infra.*). Such residual DNAPL would have remained in an immobile state unless it was connected to a source – such as existed at the Detrex facility – that would cause it to migrate within the subsurface strata of EU 8 or from the Detrex source area. (B. Kueper Report p. 10, Exhibit 8).

As further confirmed by a letter of June 6, 2001, from Robert W. Rule, Alternate Project Coordinator, to Terese Van Donsel, Remedial Project Manager for USEPA, “Excavation of DNAPL along lines and grades established by previous and proposed sampling will remove DNAPL from the area. However, residual DNAPL-impacted soils will remain.” (Exhibit 16). Consequently, USEPA was fully aware that DNAPL-impacted soils remained in EU 8 at the time it issued its approval of the final construction approval report in September 2003. The presence of DNAPL “materials” in defined subsurface areas was determined by the Agency not to present an unacceptable risk to human health or the environment.

In addition, at the time of the DNAPL clean up required by the 2001 ESD, Gradient Corporation evaluated the risks associated with the DNAPL expected to remain in Fields Brook after the completion of the remediation. Gradient prepared a document entitled *Fields Brook Floodplain DNAPL-Impacted Soils Risks Characterization*, which was submitted to and accepted by USEPA. (Exhibit 17) The Gradient Risk Characterization Report indicated no unacceptable risks would result from any residual DNAPL-impacted soils remaining at the Site after the 2001 remediation.

As a result, the 2001 DNAPL cleanup fully complied with the requirements of the 2001 ESD and was accepted by USEPA. Thereafter, USEPA allowed the entire Site including EU 8 to be transitioned to the O&M phase under the Consent Decree.

C. After Completion of the Remedial Action, the FBAG's Only Obligations at the Site for DNAPL Contamination Relate to the Maintenance of the Applicable Performance Standards for O&M Established by the Consent Decree

Since the Remedial Action has been completed and accepted by the Agency, the only obligations of the FBAG companies at the Site relate to implementation of the O&M Plan for post-construction monitoring and the requirement to maintain the Performance Standards established for the Site by the Consent Decree. The O&M Plan does not contain an obligation on the part of the FBAG companies to undertake any excavation activities related to the Site; it simply establishes the applicable procedures for the monitoring plan to develop information relating to conditions at the Site. Any requirement for additional Remedial Action must be based on a failure to meet the Performance Standards established by the Consent Decree.

The only obligations imposed on the FBAG companies by the Consent Decree relates to the Performance Standards established for the protectiveness of the remedy. This obligation is generally stated in paragraph 14 of the Consent Decree. (1999 CD p. 27, Exhibit 1). "Performance Standards" are further defined by the Consent Decree in the following terms:

"...the cleanup standards and other measures of achievement of the goals of the Remedial Action, set forth on pages 18 to 20 of the SOU ROD, Section III of the ESD, Section II of the Site wide ESD Section X of the FWA ROD and Sections II(A) and (B) of the SOW." (1999 CD p. 14, Exhibit 1) (Appendix A).

As demonstrated earlier in this document, each of these references can essentially be distilled into two basic propositions: (1) the standard for protectiveness in the SOU relates to the presence of DNAPL in the scour zone where there is a risk of exposure, and (2) within the FWA the standard for protectiveness is concerned with a one-foot depth where a similar risk of human exposure is possible. There is no Performance Standard that requires the FBAG to remove DNAPL merely because it is present in either the SOU or FWA of EU 8 outside of these defined areas or exposure zones, or in any event, if new DNAPL contamination migrates into EU 8 from the Detrex facility.

Conversely, response actions at source control properties in the Fields Brook Site are specifically excluded from the Consent Decree (para. 85). Source control properties were obligated to undertake response actions to prevent recontamination under the separate Source Control Orders issued by USEPA for the individual parcels. (1999 CD, para. W, X, Exhibit 1).

With regard to the Detrex facility, the Source Control RI/FS concluded that DNAPL at the Detrex facility had the potential to recontaminate Fields Brook and the DS

Tributary. (1997 Detrex UAO, para. 36, 44, Exhibit 5; 2004 Five-Year Review, Exhibit 9). Detrex was required to design and implement source control measures at its facility to prevent DNAPL recontamination to Fields Brook and the DS Tributary (UAO, para. 45). The Detrex 90 percent design documents indicated that DNAPL on its Site posed "recontamination concerns to Fields Brook sediments and the DS Tributary." This is precisely the situation now confronting USEPA at the Site resulting from a failure of source control at the Detrex facility.

Moreover, the FBAG companies undertook the Remedial Action at the Fields Brook Site only after being assured by USEPA that effective source control measures had been implemented at the Detrex facility. Subsequently, it has been determined that the source control measures undertaken by Detrex have been incomplete, ineffective and premised on an inaccurate conceptual site model relating to the movement patterns of DNAPL at the facility. These circumstances may jeopardize the significant remedial activities undertaken by the FBAG companies by allowing for the contamination of areas subjected to excavation and remediation during the initial Remedial Action completed by the FBAG in 2001.

Therefore, there is no plausible reading of the Consent Decree that supports imposition of a requirement on the FBAG companies to undertake remedial activities to address contamination introduced into the SOU and FWA of EU 8 from the Detrex facility after completion of the Remedial Action in 2001. The Consent Decree was definitive in establishing remediation requirements for all forms of contamination present at that time, and does not apply to new contamination in the SOU and FWA of EU 8 such as DNAPL contamination resulting from the failure of source control at the Detrex facility.

IV. THE FBAG's OBLIGATIONS UNDER THE CONSENT DECREE AND APPLICABLE PERFORMANCE STANDARDS DURING O&M PERTAINING TO ANY DNAPL CONTAMINATION REMAINING IN THE SOU AND FWA AFTER THE 2001 DNAPL CLEAN UP APPLY ONLY TO THAT IN AREAS PRESENTING A RISK TO HUMAN HEALTH AND THE ENVIRONMENT.

A. Continued Achievement of the O&M Performance Standards For DNAPL Has Been Confirmed During Routine Monitoring Activities in EU 8

In addition to achieving the Performance Standards at the time the remedy was completed in 2001, the SOU and FWA monitoring data demonstrate that the Performance Standards relating to DNAPL contamination have been maintained since 2001. The goal of the SOU and FWA monitoring program is to provide data suitable for a remedy review, as defined in the Consent Decree, "...studies and investigations... in order to permit EPA to conduct reviews of whether the Remedial Action is protective of human health and the environment..." (1999 CD, para. 18, Exhibit 1).

Accordingly, the objective, or Performance Standard, associated with the O&M work is "to be protective of human health and the environment", thus continuing the pre-remedy focus on protection of human health and the environment. As described in the section above, these goals are met if the scourable sediment and the top one foot of the FWA are not contaminated above the applicable cleanup goals. The O&M Monitoring Plan is implemented on a yearly basis in order to provide data to demonstrate that the Performance Standards continue to be met.

For purposes of both monitoring and ascertaining that risk-based Performance Standards continue to be met in the SOU, it is important to understand the effect that performance of the remedy had on the definition of "scourable sediment". Following excavation of sediments and clay in EU 8, EPA required the use of erosion resistant materials as backfill for future protection against scour. The excavated area of the SOU was thus back-filled with between 1 and 1.5 feet of 3 inch diameter cobbles, the erosion resistant material required by EPA. Sediment was placed on top of the cobbles. The use of cobbles together with the current decreased flow⁴ has fundamentally changed the depth of scour in the SOU. Although scour is still possible during storm events, it is confined to the sediment above the sediment - cobble interface. This sediment, above the sediment-cobble interface, defines the "scourable sediment" that is sampled in the Monitoring Program.

⁴ Operational changes over time have altered the discharge of water to the brook. A lower volume of water now flows through the brook than did previously.

The applicable Performance Standards during the O&M phase for the FWA remain based on maintaining acceptable chemical concentrations in the top one foot of soil. Although the 2001 ESD required excavation of liquid DNAPL at depths below the exposure zone (up to 6 inches into the clay layer), the goal of this Remedial Action requirement was to prevent recontamination of brook sediments, that is, it was not a Performance Standard in itself. EPA cited sediment monitoring as the means to ensure future protection of human health and the environment in the following terms:

"Sediment monitoring will be performed to verify that this residual contamination in the floodplain is not impacting the Brook sediment after remediation. **This approach is consistent with the use of the "depth of scour" benchmark for determining the need for deep sediment removal.**" (2001 ESD, p. 3, Exhibit 6).

Therefore, further Remedial Action below one foot in the FWA would only be required in the event that DNAPL in the FWA resulted in contamination of scourable sediments in the SOU. Further remedial action in the SOU would only be required if contamination were found in the scourable sediments.⁵ Neither situation exists in EU 8.

B. DNAPL is Not Present in the SOU Sediment, the Scour Zone, or in the Portions of the FWA Where a Risk of Exposure is Expected to Occur

The DNAPL found in 2005 was observed in the SOU either in the clay, or at the interface of the clay and filter fabric in the SOU of EU 8. (See the conceptual cross section in Figure 3, Exhibit 12.) No DNAPL was found in the cobbles or in the sediment above the cobbles in the SOU. As concluded by Teresa Bowers of Gradient Corporation, an experienced risk assessor with extensive experience at the Site, this location does not pose a risk to human health or the environment. (T. Bowers Report at pp. 2, 3, Exhibit 18).

The purpose of the cobbles as a portion of the backfill during the SOU remediation was to provide an erosion barrier as protection of sediment from residual contamination left at depth (1997 SOU ESD p. 17, Exhibit 13). The sediment provides a further barrier in the form of distance to DNAPL movement into surface water. DNAPL has not been found in the brook sediment.

There is a precedent for leaving contamination at depth in both the SOU and the FWA. EPA acknowledged in the 1997 SOU ESD that contamination below scour depth

⁵ These statements concerning possible risk-based need for further remedial action do not presume that the FBAG companies would be responsible for such future action since Detrex is the undisputed and sole source of the DNAPL contamination in EU 8. As a result, neither the Consent Decree or the CERCLA joint and several liability standard would be applicable to the separately apportionable and distinct liability arising from Detrex's conduct or failure to act relating to its source control obligations imposed by the 1997 Detrex UAO.

in the SOU would not pose a threat to human health or the environment and could be left. Similarly, EPA acknowledged in the 2001 ESD that contamination in the form of residual DNAPL could be left at depth in the FWA, so long as it did not impact sediments in the SOU in the future, which it has not done. And finally, EPA also acknowledged that other contaminants with concentrations above CUGs could be left below one foot in the FWA. (2001 ESD p. 3, Exhibit 6).

The ongoing monitoring of SOU sediment and surface water is appropriate to determine if conditions change so as to pose a risk to human health and the environment, *i.e.* if DNAPL enters the scourable sediment. To date, none of the existing DNAPL contamination is in an area where human health and the environment are at risk.

C. The O&M Monitoring Program Implemented by FBAG is Appropriate and Effective to Determine Compliance with Performance Standards Now and in the Future

The monitoring program is "the program whereby the long-term effectiveness of the remedial activities in the operable units will be measured and monitored" (2004 Monitoring Plan, page 2). The monitoring program was implemented for the first time in the summer of 2004, and again in August 2006. The focus of the monitoring program is on the scourable sediment in the SOU and the top one foot of soil in the FWA, consistent with the pre- and post-remedy performance standard goals of protection of human health and the environment in areas where exposure may potentially occur.

The monitoring program includes seven (7) SOU sediment samples in EU 8, surface water samples collected at the same location as the sediment samples, and five (5) FWA soil samples. The SOU samples are taken over the depth of sediment, which varies from location to location (*i.e.* above the cobble-sediment interface). This is the appropriate material to sample because human exposure, if it occurs, will be to the shallow and/or scourable sediments. It also meets the 2001 ESD requirement to monitor the clean sediment in order to determine whether impacts will occur from residual contamination left at depth in the FWA. The FWA samples are taken from a depth interval of 6 to 12 inches, after the top six inches of (clean) topsoil is removed. This is the appropriate depth interval to monitor in the FWA because it is consistent with EPA's focus on the potential for human exposure to the top one foot of soil in the FWA. Accordingly, the monitoring program properly evaluates the maintenance of post-remedy Performance Standards. (T. Bowers Report at pp. 4-6, Exhibit 18).

The results of the 2004 monitoring indicated that no DNAPL was present in any of the samples taken in the SOU and FWA, nor was any DNAPL contamination present at concentrations even approaching the applicable CUGs. Therefore, the SOU and FWA met the performance standards in 2004/5.

The collection of surface water samples as part of the monitoring program provides further assurance that the SOU sediments remain free of unacceptable contamination. As stated by USEPA:

"Also, regarding the potential for recontamination of Brook sediments from the underlying sediments, there is no significant potential that recharging groundwater might mobilize contamination from these deeper contained-in-place sediments and recontaminate cleaner sediment." (1997 SOU ESD, Section 4.B, Exhibit 13).

Consequently, the surface water samples provide an additional check that unacceptable levels of contaminants are not impacting surface waters *via* brook sediments. The 2004 monitoring results show minor detectable levels of some VOCs with estimated concentrations generally at or below the detection limits, and no indication that DNAPL chemicals are entering the water column.

In addition, preliminary data from the August 2006 monitoring program confirm that both the SOU and FWA in EU 8 continue to meet the Performance Standards with respect to DNAPL contamination. The 2006 monitoring data will be submitted by a separate report from the FBAG in accordance with the requirements of the O&M Plan, and it is incorporated in this Position Statement by reference.

In summary, the types of samples collected in the monitoring program are most appropriate to assess protection of human health and the environment. Monitoring of both the SOU and FWA in EU 8 is based on the depth intervals of sediment and soil to which human exposure is most likely to occur. The monitoring program not only meets the needs to evaluate the post-remedy Performance Standard of evaluating protection of human health and the environment, but confirms that no DNAPL is present in areas presenting a risk to human health and the environment in EU 8.

CONCLUSION

In asserting the determination that the FBAG companies are responsible for further removal of DNAPL contamination in EU 8 based upon its "missed" DNAPL theory, USEPA staff have arbitrarily and without justification ignored numerous uncontroverted facts relating to the Detrex facility and EU 8. They are as follows:

- Detrex is the undisputed and sole source of the DNAPL contamination in EU 8 and in Fields Brook generally.
- The DNAPL migration from the Detrex source area originally contaminated EU 8, resulting in the need for the 2001 DNAPL cleanup.
- The DNAPL now present in EU 8 is migrating from the Detrex facility in the same manner and to the same locations as the historical contamination causing the need for the 2001 DNAPL cleanup.
- USEPA has determined that the continued presence of DNAPL at the Detrex facility posed a threat for the recontamination of Fields Brook, including EU 8, if effective source control measures were not implemented.
- The failure of source control at the Detrex facility has allowed DNAPL to continue to migrate from the source area through the subsurface into EU 8.
- USEPA has agreed that the FBAG companies successfully completed the 2001 DNAPL cleanup in full compliance with the Consent Decree, the 2001 ESD and all other applicable requirements.
- USEPA's acknowledgement that residual or inaccessible DNAPL would remain in place at certain depths and locations in EU 8 after the completion of the Remedial Action required by the 2001 ESD.
- DNAPL contamination is not present in any USEPA-defined exposure zone within EU 8, and the 2001 DNAPL remedy remains in full compliance with all applicable Performance Standards.

Instead, the Agency ignores or attempts to deflect the import of these evidentiary facts by constructing an artifice premised on "missed" DNAPL allegedly remaining after the 2001 cleanup, even though there was never an absolute DNAPL removal standard required as part of the 2001 DNAPL remediation. The Agency then proceeds to employ "Alice-in-Wonderland" logic to reach the predetermined conclusion that the FBAG companies must therefore be jointly and severally liable under the Consent Decree to remove additional DNAPL contamination caused by and flowing from the Detrex facility, which is in direct violation of Detrex's source control obligations under its UAO. This conclusion is manifestly arbitrary and unjustified.

The FBAG companies were required by the 2001 ESD to undertake definitive DNAPL excavation requirements, and in many instances, they did so in excess of those specific requirements in order to implement a completely protective remedy. Having performed those tasks in a timely manner and in full compliance with all applicable requirements, USEPA accepted the completed remedial work and approved the Site for transition to the O&M phase, with monitoring of the "exposure zones" commenced to insure that the applicable Performance Standards were met. The uncontroverted evidence establishes that the remedy was protective of human health and the environment as of the completion in 2001, and that it continues to be protective to the present time.

USEPA endeavors to restate the obligations assumed by the FBAG companies without any authority to do so under any provision of the Consent Decree, particularly in the absence of any "reopener" provisions typical to many CERCLA consent decrees. Having agreed to perform the Statement of Work embodied in the 2001 ESD, fulfilled those requirements and without any indication of DNAPL contamination in the USEPA-defined exposure zones, the FBAG companies are fully justified in demanding the protections afforded to them under the explicit terms of the Consent Decree. The demand by USEPA that the FBAG companies undertake additional excavation of DNAPL contamination caused by subsurface migration from the Detrex facility must be rejected. Rather, the focus of any further requirement to undertake DNAPL removal in EU 8 must instead be directed to Detrex under the separate and independent source control obligations imposed by the 1997 Detrex UAO. The FBAG companies have not assumed responsibility for those obligations under the Consent Decree, and any attempt to impose such a requirement by USEPA is arbitrary and without any basis in law or fact.

APPENDIX A

The **SOU ROD (1986)** (Exhibit 19) sets Performance Standards to achieve a 10^{-6} excess lifetime cancer risk, or to achieve detection limits where the 10^{-6} risk level is below detection limits, or to achieve an upper 99 percent confidence limit on background for metals where the 10^{-6} risk level is below background. These risk-based Performance Standards are further defined in the 1997 ESD by the definition of cleanup goals (CUGs) and confidence removal goals (CRGs) consistent with the 10^{-6} risk standard, which were implemented by the FBAG as part of its Remedial Action in 2001. (Exhibit 13).

Section III of the ESD (1997) (Exhibit 13) establishes risk-based CUGs for a number of contaminants in the SOU, which are to be met on average over defined exposure areas, to the depth of sediment scour. **Section II(A) of the SOW (1999)** (Exhibit 20) sets out the remedial action requirement necessary to achieve these Performance Standards, which is excavation of sediments in the SOU that exceed the CUGs described in the 1997 ESD and 1999 Site-Wide ESD (Exhibit 21), within the scour zone, or to depth in the case of radionuclides.

Section X of the FWA ROD (1997) (Exhibit 14) establishes risk-based CUGs for a number of contaminants in the FWA, which are to be met on average over defined exposure areas. **Section II(B) of the SOW (1999)** (Exhibit 20) sets out the remedial action requirement necessary to achieve these Performance Standards, which is excavation of soils in the FWA that exceed the CUGs described in the 1997 ROD and 1999 Site-Wide ESD, to depth. The depth requirement is later modified in the 2001 ESD to one foot for all contaminants other than DNAPL and hexachlorobenzene, and to 6 inches into the clay layer for DNAPL and hexachlorobenzene.

Section II of the Site-Wide ESD (1999) (Exhibit 21) defines performance standards for radionuclides, and is not applicable to this analysis regarding DNAPL contamination.

